SECTION 20: HEATING AND REMIXING OF EXISTING ASPHALT PAVEMENT

20-01 SCOPE. This work will consist of heating and scarifying existing asphalt concrete pavement in one operation, followed immediately by an application of asphalt rejuvenating agent conforming to Section 21, "Asphalt Rejuvenating Agent," and recompaction of the asphalt concrete pavement.

20-02 ASPHALT HEATER SCARIFYING EQUIPMENT. The asphalt heater scarifier shall be a self-contained machine specifically designed to reprocess upper layers of bituminous pavements without excessive smoke. It shall burn propane or butane, have a minimum rating of 15,000,000 BTU output per hour, and shall comply with the requirements of the Bay Area Air Quality Management District.

The machine shall consist of a heating unit with insulated combustion chamber and scarifier. The scarifier shall be adjustable in width from eight feet (8') to twelve feet (12'). The height of the combustion chamber above the pavement shall be readily adjustable. The heater furnace shall be positioned and controlled by side shifting and rear wheel steering to heat areas divergent from the machine's longitudinal axis. The scarifier attachment shall be divided into sufficient sections individually controlled to conform with the existing cross-section, including inverted sections, and shall provide satisfactory protective devices to ensure that no damage will be done to manholes, water valves or other existing structures. The scarifier shall be pressure loaded and consist of two (2) rows of spring-equalized, hydraulic or pneumatic scarifier leveling rakes with removable teeth incorporating a release for manholes and utility covers protection. The spacing of the teeth shall be such that the aggregate be remixed by spinning or tumbling. Other means of mechanical scarification may be used with the approval of the Engineer. The machine shall be insulated and shielded in such a manner as to ensure complete protection against scorching to trees, shrubbery, vegetation and miscellaneous structures.

The heater scarifier shall have rubber tires installed over iron wheels, or other method approved by the Engineer, when the travel distance between Work sites is one thousand feet (1,000') or greater.

All equipment, tools, and machines shall be subject to the approval of the Engineer and shall be maintained in a satisfactory working condition throughout the construction period. Equipment not meeting the specifications shall be rejected. Rejected equipment shall be removed from the job site immediately and replaced with suitable types at no extra cost to the City.

20-03 PREPARATION OF PAVEMENT. Immediately prior to the heating and remixing operation, the Contractor shall remove all raised pavement markers within the limit of Work and sweep the streets with a power broom to remove dirt, debris and

other loose materials from the pavement surface. Where necessary, hand-brooming or other cleaning methods, in addition to the power brooming, shall be required to bring the entire pavement surface to a clean, suitable condition ready for heater remixing process.

20-04 CONSTRUCTION. The heating and scarifying machines shall be utilized in tandem. A minimum of two (2) machines with a combined heating chamber length of thirty-six feet (36') shall be required. Additional machines may be used at the Contractor's option, but only the rakes of the last heating unit in the heating train shall scarify.

At the start of the heater remixing operation, the ambient temperature shall be at least 50°F and rising. If the ambient temperature is 50°F and falling during the process, the heater remixing operation shall cease.

The asphalt pavement surface to be treated shall be evenly heated and scarified to a minimum depth of one inch (1") by continuously moving the heating-scarifying machines. To ensure this result, tests will be performed by weighing the scarified material. For testing purposes, 1 square foot of scarified material shall weigh at least 12 lb. (based on 144 lb./cu-ft of existing material). Scarification shall be deemed acceptable when the moving average of three consecutive random weight tests per hour satisfy the 12 lb./square foot requirement. Alternatively, the required depth of scarification may be determined by insertion of a properly calibrated probe or other suitable stabbing instrument into the uncompacted pavement. If the Contractor is unable to achieve the required depth on the first pass during the heating and scarifying operation, the City shall have the right to require a second pass, or to delete any or all work on the street upon which the specified depth of scarification is not achieved. No adjustment in the contract unit prices will be allowed in the event of such deletion. The second pass, if required, shall not be considered for payment.

The path of the rakes shall not be wider than the heating chamber. A minimum ninety percent (90%) of the pavement aggregate to be remixed shall be moved by spinning or tumbling, to ensure that existing cracks are filled. The scarified materials immediately behind the scarifier shall not be lower than 220°F or higher than 300°F when measured three (3) minutes following the scarification. The hot, loose, scarified material shall be spread evenly across the treated surface. The aggregates, after the heating and scarifying, shall not pulverize, spall or break.

Care shall be taken to avoid damaging existing pavements, sidewalk, curb, gutter, trees, bushes, shrubs and other improvements along the street being treated. The pavement that is not part of the project shall not soften more than six inches (6") beyond the Work limit. During the heater remixing operation, the Contractor shall thoroughly spray all trees, shrubs, bushes and other vegetation along the street with water to protect them from being scorched by the heat. If any pavement not being over-laid is scored or otherwise damaged by the transport of the heater furnace machinery,

full cost of repair will be borne by the Contractor. The minimum acceptable repair work will be to fog seal the entire area of the damaged pavement and replace the damaged pavement markers and street structures. If necessary, more extensive repair work, as determined by the Engineer, will be done at the Contractor's expense. Other improvements, if damaged, shall be repaired or replaced to the satisfaction of the Engineer.

Immediately following the heating, scarifying and remixing process, and while the material is hot, an asphalt rejuvenating agent shall be applied in accordance with Section 21, "Asphalt Rejuvenating Agent for Heater Remix Operations," of the Standard Provisions.

Immediately following the asphalt rejuvenating and while the remixed surface is in a softened state, a twelve (12) ton or heavier double-steel-drum or equivalent roller approved by the Engineer shall be used for compaction. No surface shall be allowed to stand after heating for such a period of time as to prevent proper compaction and bonding of remixed material. Rolling shall be performed in a manner that will preserve the wedge cut at the lip of gutter or face of curb.

Unless otherwise specified, the Contractor shall overlay the streets within forty-eight (48) hours following the heating and remixing operation.

20-05 MEASUREMENT. Heater remix shall be measured by the square foot.

20-06 PAYMENT. The contract unit price paid per square foot of heater remix pavement shall constitute full compensation for furnishing all labor, tools, materials and equipment; including heating, scarifying, applying asphalt rejuvenating agent and compacting to complete the Work as required in the Special Provisions, shown on the Plans and specified herein.